

# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : RICOH CO LTD

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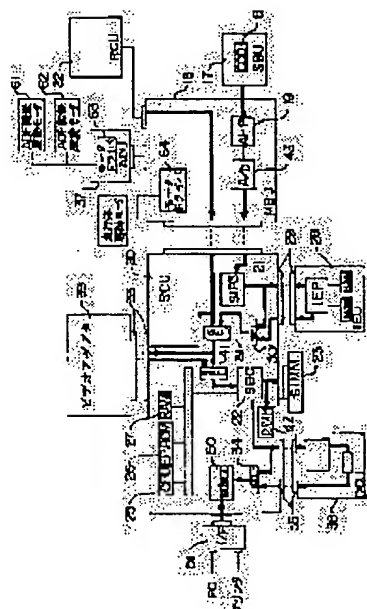
(72)Inventor : KITANI YUKITOSHI

## (54) IMAGE READER

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To connect to a general printer and to shorten a time before printing by working read image data into dot map data that corresponds to a page description language which can be printed by a printer of an output destination in accordance with the printer that is connected to an interface and directly transferring it without a host computer.

**SOLUTION:** A CCD 6 scans an original and acquires an analog signal. An A/D converter 43 makes the analog signal into a digital signal. A mother board unit 18 sends the digital signal to a scanner control unit(SCU) 20. The SCU 20 makes the signal into a video signal by performing various corrections and outputs it to a host computer PC that is an external device and or a printer via an interface part 51. An image data working means 50 is provided with various working processing parts such as PCL working processing, ESP/P working processing, PS working processing, etc., and performs working that corresponds to a printer of an output destination.



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CLAIMS

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[Claim(s)]

[Claim 1] The image reader which was equipped with a reading means to read a manuscript image, an image data processing means to process the read image data, and the 1st interface means that transmits the processed image data to an external device, and was characterized by having the 2nd interface means which transmits the processed image data to printer equipment.

[Claim 2] The image reader characterized by having an image data processing means to process image data into the dot map data set by the printer connected to the 2nd interface means in invention according to claim 1.

[Claim 3] The image reader characterized by choosing an image data processing selection means according to the printer which has two or more image data processing means and an image data processing selection means to choose one of two or more image data processing means, in invention according to claim 1 or 2, and was connected to the 2nd interface means.

[Claim 4] The image reader characterized by outputting the image data which performed and read image data processing selection and reading actuation with the directions from the 1st interface means in invention according to claim 1, 2, or 3 to the 2nd interface means.

[Claim 5] The image reader which has a control unit, performed image data processing selection and reading actuation with the directions from a control unit, and was characterized by outputting the read image data to the 2nd interface means in invention according to claim 1, 2, or 3.

[Claim 6] The image reader characterized by the 2nd interface means being Centronics in invention according to claim 3.

[Claim 7] The image reader with which the 1st interface means and the 2nd interface means were characterized by being physically the same and having dissociated theoretically in invention according to claim 1, 2, or 3.

[Claim 8] The image reader characterized by the 1st interface means and the 2nd interface means being SCSI (Small Computer System Interface) in invention according to claim 7.

[Claim 9] The image reader characterized by the 1st interface means and the 2nd interface means being networks in invention according to claim 7.

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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]**

**[0001]**

**[Field of the Invention]** This invention relates to the image reader which can transmit image data to an external device.

**[0002]**

**[Description of the Prior Art]** In the conventional image reader which can transmit image data to an external device, image data is transmitted to a direct printer or a hard disk, without minding a host computer. For example, it has an image reading means and an input/output interface, and the image reader equipped with a conversion means to change internal control into initiator actuation, and a communications control means to control the communication link with an external device based on initiator actuation is known as indicated by JP,3-291045,A. Moreover, in the image reader which sends out image information to an external device using SCSI, it has a predetermined storage means and a predetermined image information output means, and the image reader which outputs image information according to the file format and the output destination change which the host computer specified is known as indicated by JP,4-12577,A.

**[0003]** Although invention of transmitting the output of an image reader to direct printer equipment was known like invention indicated by the official report of a before [ the above ] name, since it was not the configuration that image data was processed into the data of the format which a printer can print, connectable printer equipment is dedication and connection with the general-purpose printer corresponding to a general Page Description Language was not completed. Moreover, although the system connected to a general-purpose printer through a host computer also existed like invention indicated by the official report of an after [ the above ] name, there was a trouble of once taking time amount to a printed output through a host computer.

**[0004]**

**[Problem(s) to be Solved by the Invention]** This invention aims at offering the image reader which can shorten printed output time amount by carrying out transfer direct of the image data which solved and read the above-mentioned trouble in the data format which can be printed by the printer.

**[0005]**

**[Means for Solving the Problem]** It is characterized by having the 2nd interface means which transmits the image data which invention according to claim 1 was equipped with a reading means to read a manuscript image, an image data processing means to process the read image data, and the 1st interface means that transmits the processed image data to an external device, and was processed to printer equipment in order to solve said technical problem.

**[0006]** In order to solve said technical problem, invention according to claim 2 is characterized by having an image data processing means to process image data into the dot map data set by the printer connected to the 2nd interface means in invention according to claim 1.

**[0007]** In order to solve said technical problem, in invention according to claim 1 or 2, invention according to claim 3 has two or more image data processing means and an image data processing selection means to choose one of two or more image data processing means, and is

characterized by choosing an image data processing selection means according to the printer connected to the 2nd interface means.

[0008] In order to solve said technical problem, invention according to claim 4 is characterized by outputting the image data which performed and read image data processing selection and reading actuation with the directions from the 1st interface means to the 2nd interface means in invention according to claim 1, 2, or 3.

[0009] In order to solve said technical problem, in invention according to claim 1, 2, or 3, invention according to claim 5 has a control unit, and is characterized by outputting the image data which performed and read image data processing selection and reading actuation with the directions from a control unit to the 2nd interface means.

[0010] In order to solve said technical problem, invention according to claim 6 is characterized by the 2nd interface means being Centronics in invention according to claim 3.

[0011] In order to solve said technical problem, in invention according to claim 1, 2, or 3, invention according to claim 7 has the 1st interface means and the 2nd physically same interface means, and is characterized by having dissociated theoretically.

[0012] In order to solve said technical problem, invention according to claim 8 is characterized by the 1st interface means and the 2nd interface means being SCSI (Small Computer System Interface) in invention according to claim 7.

[0013] In order to solve said technical problem, invention according to claim 9 is characterized by the 1st interface means and the 2nd interface means being networks in invention according to claim 7.

[0014]

[Embodiment of the Invention] Hereafter, the gestalt of operation of the image reader concerning this invention is explained, referring to a drawing. Drawing 1 is the side elevation showing an example of the mechanical component of the image reader concerning this invention. The 1st transit object 100 and the 2nd transit object 101 are arranged under the manuscript base glass 1 which carries a manuscript. The 1st transit object 100 has the lighting lamp 3 and the 1st mirror 2, and is movable in one. [ of the lighting lamp 3 and the 1st mirror 2 ] The 1st mirror 2 reflects the reflected light from a manuscript horizontally. Moreover, the 2nd transit object 101 has the 2nd mirror 4 and the 3rd mirror 5, and these 2nd and 3rd mirrors 4 and 5 are movable in one. The 2nd and 3rd mirror 4 and 5 is installed so that a reflector may become a right angle mutually, and it turns up the reflected light from the 1st mirror 2 horizontally. After that, the reflected light converges with a lens 38, it is irradiated by CCD6 and photo electric translation is carried out to it. Both the 1st transit object 100 and the 2nd transit object 101 make the transit object motor 7 a driving source, and are movable in the direction of A. In order to keep constant the optical distance from the manuscript under exposure to CCD16 at this time, he is trying for the 1st transit object 100 to move at a twice as many rate as this to the 2nd transit object 101.

[0015] the manuscript laid in the manuscript tray 8 — a pickup roller 9 and a resist roller pair — pass a reading station B with 10, the conveyance drum 11, and the conveyance roller 12 — a delivery roller pair — it is sent into 13 and 14 and is discharged on a paper output tray 15.

[0016] A manuscript is irradiated with the lighting lamp 3 moved near the reading station B in case a reading station B is passed, and the reflected light is scanned by the 2nd mirror 4 and the 3rd mirror 5 which were constituted by the 1st mirror 2 and one. After that, the reflected light converges with a lens 38, it is irradiated by CCD6 and photo electric translation is carried out to it.

[0017] When reading the manuscript laid on manuscript base glass 1 although the 1st transit object 100 and the 2nd transit object 101 have stopped at the transit marginal location to the method of the right in drawing 1 when a manuscript was supplied from the manuscript tray 8 as mentioned above, a manuscript is read making it run the 1st transit object 100 and the 2nd transit object 101 along with manuscript base glass 1. In drawing 1, it is shown that a sign with a parenthesis (2), (3), (4), and (5) have the lighting lamp 3, the 1st mirror 2, the 2nd mirror 4, and the 4th mirror 5 in the marginal location to a left, respectively.

[0018] a pickup roller 9 and a resist roller pair — 10 and a delivery roller pair — 13 and 14 are driven by the conveyance motor which is not illustrated — having — the conveyance drum 11,

the conveyance roller 2, and a delivery roller pair — 13 and 14 are driven by the conveyance motor 16.

[0019] Drawing 2 is the block diagram showing the example of the electric signal-processing system of the image reader concerning this invention, and a control system. ON light of the reflected light of the scanned manuscript is carried out to CCD6 on SBU(sensor board unit) 17, and it is changed into the analog signal which has an electrical-potential-difference value according to luminous intensity within CCD6. An analog signal is divided and outputted to odd bits and even bits. A dark potential part is removed by AHP(analog data handling peripheral) 19 on MBU(mother board unit) 18, odd bits and even bits are compounded, after the gain adjustment of the analog picture signal is carried out to the predetermined amplitude, it is inputted into A/D converter 43, and it is digital-signal-ized.

[0020] After a shading compensation, a gamma correction, and MTF amendment are performed by SIP3 (scanner image peripheral) 21 on SCU(scanner control unit) 20, the digitized picture signal is made binary and outputted as a video signal with a page synchronizing signal, a line synchronizing signal, and an image clock.

[0021] The video signal outputted from SIP3 (21) is outputted to IEU (image enhancing unit)28 through the connector 29. An image processing predetermined within IEU28 is performed, and the video signal outputted to IEU28 is again inputted into SCU20.

[0022] The video signal again inputted into SCU20 is inputted into a selector 30. The video signal outputted from SIP3 (21) is a signal inputted into the direct selector 30, and another input signal of a selector 30 has composition which can choose the signal with which the image processing was carried out, and the signal with which the image processing is not carried out in IEU28.

[0023] The output signal of a selector 30 is inputted into a selector 31. Another input signal of a selector 31 is a video signal from RCU(reverse-side control unit) 32, and has composition which can choose any of the table of a manuscript, or the reading information on hidden they are.

[0024] In case the above RCU32 reads both sides of a manuscript simultaneously, it is a unit which controls background reading of a manuscript. RCU32 is controlled by serial communication by CPU25 in SCU20, and is transmitted to SCU20 by the MBU18 above-mentioned course by making the read rear-face image data into a video signal.

[0025] The video signal output from a selector 31 is inputted into the video adapter 39 connected to the selector 41 and the connector 33. The video signal inputted into the video adapter 39 is processed with a video adapter 39, and is inputted into the selector 41 through the connector 33. In the selector 41, it has composition which can choose the video signal from a selector 33, and the video signal from a video adapter 39. The video signal output from a selector 41 is inputted into SBC (scanning buffer controller)22.

[0026] Through the above path, the video signal outputted from SIP3 (21) is inputted into the above SBC 22 which manages the image data storage means (DRAM) 42, and is stored in the image memory which consists of DRAMs42 including SIMM (single in-line memory module)23. The output of SBC22 is inputted into DCU (data compression unit)36 through a selector 34 and a connector 35. The inputted image data is compressed in DCU36. The image data compressed by DCU36 and the image data outputted from SBC22 serve as an input signal of a selector 34, and the selector 34 has composition which can choose whether image data is compressed or it does not carry out.

[0027] The image data output chosen by said selector 34 is sent to the image data processing section 50. Within the image data processing section 50, the image data inputted with the directions from CPU25 is processed into the dot map data of the data format corresponding to the Page Description Language of the printer of an output destination change. When outputting to a host computer, without carrying out a printer output, through is carried out without processing it and it outputs.

[0028] The image data output of the image data processing section 50 is sent to the host computer or printer equipment which is an external device through the interface section 51.

[0029] On said SCU20, CPU25, ROM26, and RAM27 are mounted, a SCSI controller is controlled and the communication link with a host computer is performed. Moreover, CPU25 performs timing of the transit object motor 7 which is a stepping motor of operation through Motor Driver

64, and is also performing timing control of the feed motor which is not illustrated and the conveyance motor 16.

[0030] ADU (ADF driving unit)37 has the function to relay the electric power supply to the ADF feeding drive motor 62 and ADF conveyance drive-motor 61 grade which are the electric equipment article used for the automatic manuscript conveyance device (ADF) section, through Motor Driver 63, and is connected to MBU18.

[0031] Drawing 3 shows the configuration of the image data processing section 50. The image data processing section 50 consists of two or more processing processing sections 53, 54, and 55 and selectors 56 according to printer to output. The selector 56 has composition which chooses one from four, two or more processing processing sections 53, 54, and 55 and raw data. In addition, in the gestalt of this operation, although the case where it has the three processing processing sections for the object for the printers made from HP (Hewlett Packard) (53-CL processing processing section), the object for the Epson printers (54:ESP/P processing processing section), and PostScript printers (55-S processing processing section) is shown, this invention cannot be limited to these and can fluctuate the number of the processing processing sections if needed.

[0032] The header which expresses the address, a printer paper size, printing number of sheets, etc. of where [ of the width of face of image data, die length and a form ] to print with each processing processing sections 53, 54, and 55 is inserted in the head (or rear) of image data, and the order exchange of a bit of image data and ASCII-ized processing (for example, 58hex->35hex+38hex) of binary data are performed if needed. Each processing processing \*\*\*\* 53, 54, and 55 is connected to CPU25 bus, and the information on the above-mentioned header is written in each processing processing sections 53, 54, and 55 by CPU25.

[0033] (a) of drawing 4 , (b), and (c) show the example of the configuration of the interface section 51, respectively. In (a) of drawing 4 , (b), and (c), the interface section 51 has SCU20 and detachable composition. In drawing 4 (a), the interface section 51 which consists of a SCSI control section 57 and a SENTORO control section 58 is connected with SCU20, the SCSI control section 57 is connected to a host computer, and the SENTORO control section 58 is connected to the printer, respectively. In the gestalt of this operation, the 1st interface means corresponds to the SCSI control section 57, and the 2nd interface means corresponds to the SENTORO control section 58.

[0034] In drawing 4 (b), the interface section 51 which consists only of a SCSI control section 59 is connected with SCU20, and the SCSI control section 59 is connected to the host computer and the printer by the SCSI bus. In the gestalt of this operation, the 1st interface means and the 2nd interface means correspond to the SCSI control section 59.

[0035] In drawing 4 (c), the interface section 51 which consists only of the network control section 60 is connected with SCU20, and the SCSI control section 60 is connected to the host computer and the printer by the network. In the gestalt of this operation, the 1st interface means and the 2nd interface means correspond to the network control section 60.

[0036] CPU25 in SCU20 controls each interface section according to a program code different from the interface mounted on EPROM26. When the physical interface for printers is the same as the physical interface for host computers, the interface section is controlled according to the program code according to connection place.

[0037] Drawing 5 shows a flow chart when an output instruction comes to a printer from a host computer. first, a host computer top — reading conditions and printing conditions — setting up (S1) — reading conditions and printing conditions are transmitted to a reader through SCSI (S2). The printing conditions in the image data processing section are set up (S3). Initiation of operation is directed on a host computer (S4). Initiation of operation is directed to a reader through SCSI (S5). The read image data is transmitted to a printer with Centronics through the image data processing section (S6). After reading is completed and the transfer to the printer of all image data is completed (S7), printing actuation by the printer is performed (S8).

[0038] Drawing 6 shows a flow chart when printer output directions come from a control unit. First, reading and printing conditioning are carried out with control unit top various mode setting switches (S11). Printing conditions are set to the image data processing section (S12), and

initiation of operation is directed with a start-on control unit switch (S13). The read image data is transmitted to a printer with Centronics through the image data processing section (S14). reading termination — carrying out — the transfer to the printer of all image data — ending (S15) — printing actuation by the printer is performed (S16).

[0039] Drawing 7 shows a flow chart in case a physical interface is one SCSI. a host computer top — reading conditions and printing conditions (the output destination change printer ID is included) — setting up (S21) — reading conditions and printing conditions are transmitted to a reader through SCSI (S22). (a reader is target actuation) Printing conditions are set to the image data processing section (S23). Initiation of operation is directed on a host computer (S24), and initiation of operation is directed through SCSI to a reader (S25). (a reader is target actuation) The read image data is transmitted to the printer specified in SCSI through the image data processing section (S26). (this reader is initiator actuation) reading termination — carrying out — the transfer to the printer of all image data — ending (S27) — printing actuation by the printer is performed (S28).

[0040] Drawing 8 shows a flow chart in case a physical interface is one network. Reading conditions and printing conditions (the output destination change printer address is also included) are set up on a client (S31). Reading conditions and printing conditions are transmitted to a reader through a network (there is also a case via a server) (S32). Printing conditions are set to the image data processing section (S33). Initiation of operation is directed on a client (S34). Initiation of operation is directed to a reader through a network (there is also a case via a server) (S35). After the read image data is transmitted to the printer specified through the image data processing section in the network (S36), and carries out reading termination (S37) and the transfer to the printer of all image data is completed, printing actuation by the printer is performed (S38).

[0041] Drawing 9 shows the example of processing of image data. The image data (left-hand side in drawing) inputted into the image data processing section 50 in each processing processing sections 53, 54, and 55 in the image data processing section 50 The address of where [ of the width of face of image data, die length and a form ] to print, a printer paper size, The header showing printing number of sheets is inserted in the head of image data, the order exchange of a bit of image data and ASCII-ized processing (for example, 58hex→35hex+38hex) of binary data are performed if needed, and it changes into header + processing image data (drawing Nakamigi side).

[0042] Drawing 10 is the top view having shown the example of a control unit 52. A control unit 52 consists of LCD which performs character representation, and two or more switches, and is controlled by serial communication from CPU20. The start key 201, the ten key 202, the clearance/stop key 203, and the mode clear key 204 are formed in the actuation display 200. A push on a switch carries out character representation of the character code to which the code corresponding to the switch was sent to CPU20, and has been sent from CPU20 to LCD. The various keys which the various LED displays which perform the selected mode display are prepared, and set up paper-size, concentration, alphabetic character, photograph, etc. and printing conditions and reading conditions are prepared in another actuation display 205.

[0043]

[Effect of the Invention] A reading means to read a manuscript image according to invention according to claim 1, and an image data processing means to process the read image data, It has the 1st interface means which transmits the processed image data to an external device. Have the 2nd interface means which transmits the processed image data to printer equipment, and since the transfer direct of the read image data can be carried out in the data format which can be printed on printer equipment Time amount until it carries out a printed output to the case where it outputs to printer equipment through a host computer can be shortened.

[0044] Since according to invention according to claim 2 it has an image data processing means to process image data into the dot map data set by the printer connected to the 2nd interface means in invention according to claim 1 and image data is changed into a general Page Description Language, it becomes possible to connect with a general-purpose printer.

[0045] Since two or more Page Description Languages are supported in order to choose an



image data processing selection means according to the printer which has two or more image data processing means and an image data processing selection means to choose one of two or more image data processing means, in invention according to claim 1 or 2, and was connected to the 2nd interface means according to invention according to claim 3, it is connectable with the printer of other types.

[0046] According to invention according to claim 4, it sets to invention according to claim 1, 2, or 3. Perform image data processing selection and reading actuation by the directions from the 1st interface means, and since the read image data is outputted to the 2nd interface means Also in the image reader which does not have a control unit, selection of the class of a printer direct output and printer is attained, it becomes unnecessary to prepare a control unit, a configuration can be simplified, and a miniaturization and low cost-ization are attained.

[0047] According to invention according to claim 5, in invention according to claim 1, 2, or 3, it has a control unit, and image data processing selection and reading actuation are performed with the directions from a control unit, since the read image data is outputted to the 2nd interface means, selection of the class of a printer direct output and printer is attained without operating a host computer, and load reduction of a host computer and improvement in operability can be aimed at.

[0048] According to invention according to claim 6, in invention according to claim 3, since the 2nd interface means is Centronics, it has the most general printer physics IF and the class of connectable printer can be made [ many ].

[0049] Although the 1st interface means and the 2nd interface means have dissociated theoretically, since it is physically the same in invention according to claim 1, 2, or 3 according to invention according to claim 7, a miniaturization and low-cost-izing of equipment can be attained.

[0050] According to invention according to claim 8, in invention according to claim 7, since the 1st interface means and the 2nd interface means are set to general SCSI, a printer direct output can be carried out with many image readers.

[0051] According to invention according to claim 9, in invention according to claim 7, the printer direct output from many printers can be carried out by making the 1st interface means and the 2nd interface means into a general network.

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TECHNICAL FIELD

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[Field of the Invention] This invention relates to the image reader which can transmit image data to an external device.

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**PRIOR ART**

[Description of the Prior Art] In the conventional image reader which can transmit image data to an external device, image data is transmitted to a direct printer or a hard disk, without minding a host computer. For example, it has an image reading means and an input/output interface, and the image reader equipped with a conversion means to change internal control into initiator actuation, and a communications control means to control the communication link with an external device based on initiator actuation is known as indicated by JP,3-291045,A. Moreover, in the image reader which sends out image information to an external device using SCSI, it has a predetermined storage means and a predetermined image information output means, and the image reader which outputs image information according to the file format and the output destination change which the host computer specified is known as indicated by JP,4-12577,A. [0003] Although invention of transmitting the output of an image reader to direct printer equipment was known like invention indicated by the official report of a before [ the above ] name, since it was not the configuration that image data was processed into the data of the format which a printer can print, connectable printer equipment is dedication and connection with the general-purpose printer corresponding to a general Page Description Language was not completed. Moreover, although the system connected to a general-purpose printer through a host computer also existed like invention indicated by the official report of an after [ the above ] name, there was a trouble of once taking time amount to a printed output through a host computer.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] A reading means to read a manuscript image according to invention according to claim 1, and an image data processing means to process the read image data, It has the 1st interface means which transmits the processed image data to an external device. Have the 2nd interface means which transmits the processed image data to printer equipment, and since the transfer direct of the read image data can be carried out in the data format which can be printed on printer equipment Time amount until it carries out a printed output to the case where it outputs to printer equipment through a host computer can be shortened.

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[0045] Since two or more Page Description Languages are supported in order to choose an image data processing selection means according to the printer which has two or more image data processing means and an image data processing selection means to choose one of two or more image data processing means, in invention according to claim 1 or 2, and was connected to the 2nd interface means according to invention according to claim 3, it is connectable with the printer of other types.

[0046] According to invention according to claim 4, it sets to invention according to claim 1, 2, or 3. Perform image data processing selection and reading actuation by the directions from the 1st interface means, and since the read image data is outputted to the 2nd interface means Also in the image reader which does not have a control unit, selection of the class of a printer direct output and printer is attained, it becomes unnecessary to prepare a control unit, a configuration can be simplified, and a miniaturization and low cost-ization are attained.

[0047] According to invention according to claim 5, in invention according to claim 1, 2, or 3, it has a control unit, and image data processing selection and reading actuation are performed with the directions from a control unit, since the read image data is outputted to the 2nd interface means, selection of the class of a printer direct output and printer is attained without operating a host computer, and load reduction of a host computer and improvement in operability can be aimed at.

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[0049] Although the 1st interface means and the 2nd interface means have dissociated theoretically, since it is physically the same in invention according to claim 1, 2, or 3 according to invention according to claim 7, a miniaturization and low-cost-izing of equipment can be attained.

[0050] According to invention according to claim 8, in invention according to claim 7, since the 1st interface means and the 2nd interface means are set to general SCSI, a printer direct output can be carried out with many image readers.

[0051] According to invention according to claim 9, in invention according to claim 7, the printer direct output from many printers can be carried out by making the 1st interface means and the

2nd interface means into a general network.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] This invention aims at offering the image reader which can shorten printed output time amount by carrying out transfer direct of the image data which solved and read the above-mentioned trouble in the data format which can be printed by the printer.

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**MEANS**

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[Means for Solving the Problem] It is characterized by having the 2nd interface means which transmits the image data which invention according to claim 1 was equipped with a reading means to read a manuscript image, an image data processing means to process the read image data, and the 1st interface means that transmits the processed image data to an external device, and was processed to printer equipment in order to solve said technical problem.

[0006] In order to solve said technical problem, invention according to claim 2 is characterized by having an image data processing means to process image data into the dot map data set by the printer connected to the 2nd interface means in invention according to claim 1.

[0007] In order to solve said technical problem, in invention according to claim 1 or 2, invention according to claim 3 has two or more image data processing means and an image data processing selection means to choose one of two or more image data processing means, and is characterized by choosing an image data processing selection means according to the printer connected to the 2nd interface means.

[0008] In order to solve said technical problem, invention according to claim 4 is characterized by outputting the image data which performed and read image data processing selection and reading actuation with the directions from the 1st interface means to the 2nd interface means in invention according to claim 1, 2, or 3.

[0009] In order to solve said technical problem, in invention according to claim 1, 2, or 3, invention according to claim 5 has a control unit, and is characterized by outputting the image data which performed and read image data processing selection and reading actuation with the directions from a control unit to the 2nd interface means.

[0010] In order to solve said technical problem, invention according to claim 6 is characterized by the 2nd interface means being Centronics in invention according to claim 3.

[0011] In order to solve said technical problem, in invention according to claim 1, 2, or 3, invention according to claim 7 has the 1st interface means and the 2nd physically same interface means, and is characterized by having dissociated theoretically.

[0012] In order to solve said technical problem, invention according to claim 8 is characterized by the 1st interface means and the 2nd interface means being SCSI (Small Computer System Interface) in invention according to claim 7.

[0013] In order to solve said technical problem, invention according to claim 9 is characterized by the 1st interface means and the 2nd interface means being networks in invention according to claim 7.

[0014]

[Embodiment of the Invention] Hereafter, the gestalt of operation of the image reader concerning this invention is explained, referring to a drawing. Drawing 1 is the side elevation showing an example of the mechanical component of the image reader concerning this invention. The 1st transit object 100 and the 2nd transit object 101 are arranged under the manuscript base glass 1 which carries a manuscript. The 1st transit object 100 has the lighting lamp 3 and the 1st mirror 2, and is movable in one. [ of the lighting lamp 3 and the 1st mirror 2 ] The 1st mirror 2 reflects the reflected light from a manuscript horizontally. Moreover, the 2nd transit object 101 has the 2nd mirror 4 and the 3rd mirror 5, and these 2nd and 3rd mirrors 4 and 5 are movable in one. The

2nd and 3rd mirror 4 and 5 is installed so that a reflector may become a right angle mutually, and it turns up the reflected light from the 1st mirror 2 horizontally. After that, the reflected light converges with a lens 38, it is irradiated by CCD6 and photo electric translation is carried out to it. Both the 1st transit object 100 and the 2nd transit object 101 make the transit object motor 7 a driving source, and are movable in the direction of A. In order to keep constant the optical distance from the manuscript under exposure to CCD16 at this time, he is trying for the 1st transit object 100 to move at a twice as many rate as this to the 2nd transit object 101.

[0015] the manuscript laid in the manuscript tray 8 — a pickup roller 9 and a resist roller pair — pass a reading station B with 10, the conveyance drum 11, and the conveyance roller 12 — a delivery roller pair — it is sent into 13 and 14 and is discharged on a paper output tray 15.

[0016] A manuscript is irradiated with the lighting lamp 3 moved near the reading station B in case a reading station B is passed, and the reflected light is scanned by the 2nd mirror 4 and the 3rd mirror 5 which were constituted by the 1st mirror 2 and one. After that, the reflected light converges with a lens 38, it is irradiated by CCD6 and photo electric translation is carried out to it.

[0017] When reading the manuscript laid on manuscript base glass 1 although the 1st transit object 100 and the 2nd transit object 101 have stopped at the transit marginal location to the method of the right in drawing 1 when a manuscript was supplied from the manuscript tray 8 as mentioned above, a manuscript is read making it run the 1st transit object 100 and the 2nd transit object 101 along with manuscript base glass 1. In drawing 1, it is shown that a sign with a parenthesis (2), (3), (4), and (5) have the lighting lamp 3, the 1st mirror 2, the 2nd mirror 4, and the 4th mirror 5 in the marginal location to a left, respectively.

[0018] a pickup roller 9 and a resist roller pair — 10 and a delivery roller pair — 13 and 14 are driven by the conveyance motor which is not illustrated — having — the conveyance drum 11, the conveyance roller 2, and a delivery roller pair — 13 and 14 are driven by the conveyance motor 16.

[0019] Drawing 2 is the block diagram showing the example of the electric signal-processing system of the image reader concerning this invention, and a control system. ON light of the reflected light of the scanned manuscript is carried out to CCD6 on SBU(sensor board unit) 17, and it is changed into the analog signal which has an electrical-potential-difference value according to luminous intensity within CCD6. An analog signal is divided and outputted to odd bits and even bits. A dark potential part is removed by AHP(analog data handling peripheral) 19 on MBU(mother board unit) 18, odd bits and even bits are compounded, after the gain adjustment of the analog picture signal is carried out to the predetermined amplitude, it is inputted into A/D converter 43, and it is digital-signal-ized.

[0020] After a shading compensation, a gamma correction, and MTF amendment are performed by SIP3 (scanner image peripheral) 21 on SCU(scanner control unit) 20, the digitized picture signal is made binary and outputted as a video signal with a page synchronizing signal, a line synchronizing signal, and an image clock.

[0021] The video signal outputted from SIP3 (21) is outputted to IEU (image enhancing unit)28 through the connector 29. An image processing predetermined within IEU28 is performed, and the video signal outputted to IEU28 is again inputted into SCU20.

[0022] The video signal again inputted into SCU20 is inputted into a selector 30. The video signal outputted from SIP3 (21) is a signal inputted into the direct selector 30, and another input signal of a selector 30 has composition which can choose the signal with which the image processing was carried out, and the signal with which the image processing is not carried out in IEU28.

[0023] The output signal of a selector 30 is inputted into a selector 31. Another input signal of a selector 31 is a video signal from RCU(reverse-side control unit) 32, and has composition which can choose any of the table of a manuscript, or the reading information on hidden they are.

[0024] In case the above RCU32 reads both sides of a manuscript simultaneously, it is a unit which controls background reading of a manuscript. RCU32 is controlled by serial communication by CPU25 in SCU20, and is transmitted to SCU20 by the MBU18 above-mentioned course by making the read rear-face image data into a video signal.

[0025] The video signal output from a selector 31 is inputted into the video adapter 39



connected to the selector 41 and the connector 33. The video signal inputted into the video adapter 39 is processed with a video adapter 39, and is inputted into the selector 41 through the connector 33. In the selector 41, it has composition which can choose the video signal from a selector 33, and the video signal from a video adapter 39. The video signal output from a selector 41 is inputted into SBC (scanning buffer controller)22.

[0026] Through the above path, the video signal outputted from SIP3 (21) is inputted into the above SBC 22 which manages the image data storage means (DRAM) 42, and is stored in the image memory which consists of DRAMs42 including SIMM (single in-line memory module)23. The output of SBC22 is inputted into DCU (data compression unit)36 through a selector 34 and a connector 35. The inputted image data is compressed in DCU36. The image data compressed by DCU36 and the image data outputted from SBC22 serve as an input signal of a selector 34, and the selector 34 has composition which can choose whether image data is compressed or it does not carry out.

[0027] The image data output chosen by said selector 34 is sent to the image data processing section 50. Within the image data processing section 50, the image data inputted with the directions from CPU25 is processed into the dot map data of the data format corresponding to the Page Description Language of the printer of an output destination change. When outputting to a host computer, without carrying out a printer output, through is carried out without processing it and it outputs.

[0028] The image data output of the image data processing section 50 is sent to the host computer or printer equipment which is an external device through the interface section 51.

[0029] On said SCU20, CPU25, ROM26, and RAM27 are mounted, a SCSI controller is controlled and the communication link with a host computer is performed. Moreover, CPU25 performs timing of the transit object motor 7 which is a stepping motor of operation through Motor Driver 64, and is also performing timing control of the feed motor which is not illustrated and the conveyance motor 16.

[0030] ADU (ADF driving unit)37 has the function to relay the electric power supply to the ADF feeding drive motor 62 and ADF conveyance drive-motor 61 grade which are the electric equipment article used for the automatic manuscript conveyance device (ADF) section, through Motor Driver 63, and is connected to MBU18.

[0031] Drawing 3 shows the configuration of the image data processing section 50. The image data processing section 50 consists of two or more processing processing sections 53, 54, and 55 and selectors 56 according to printer to output. The selector 56 has composition which chooses one from four, two or more processing processing sections 53, 54, and 55 and raw data. In addition, in the gestalt of this operation, although the case where it has the three processing processing sections for the object for the printers made from HP (Hewlett Packard) (53-CL processing processing section), the object for the Epson printers (54:ESP/P processing processing section), and PostScript printers (55-S processing processing section) is shown, this invention cannot be limited to these and can fluctuate the number of the processing processing sections if needed.

[0032] The header which expresses the address, a printer paper size, printing number of sheets, etc. of where [ of the width of face of image data, die length and a form ] to print with each processing processing sections 53, 54, and 55 is inserted in the head (or rear) of image data, and the order exchange of a bit of image data and ASCII-ized processing (for example, 58hex->35hex+38hex) of binary data are performed if needed. Each processing processing \*\*\*\* 53, 54, and 55 is connected to CPU25 bus, and the information on the above-mentioned header is written in each processing processing sections 53, 54, and 55 by CPU25.

[0033] (a) of drawing 4 , (b), and (c) show the example of the configuration of the interface section 51, respectively. In (a) of drawing 4 , (b), and (c), the interface section 51 has SCU20 and detachable composition. In drawing 4 (a), the interface section 51 which consists of a SCSI control section 57 and a SENTORO control section 58 is connected with SCU20, the SCSI control section 57 is connected to a host computer, and the SENTORO control section 58 is connected to the printer, respectively. In the gestalt of this operation, the 1st interface means corresponds to the SCSI control section 57, and the 2nd interface means corresponds to the

SENTORO control section 58.

[0034] In drawing 4 (b), the interface section 51 which consists only of a SCSI control section 59 is connected with SCU20, and the SCSI control section 59 is connected to the host computer and the printer by the SCSI bus. In the gestalt of this operation, the 1st interface means and the 2nd interface means correspond to the SCSI control section 59.

[0035] In drawing 4 (c), the interface section 51 which consists only of the network control section 60 is connected with SCU20, and the SCSI control section 60 is connected to the host computer and the printer by the network. In the gestalt of this operation, the 1st interface means and the 2nd interface means correspond to the network control section 60.

[0036] CPU25 in SCU20 controls each interface section according to a program code different from the interface mounted on EPROM26. When the physical interface for printers is the same as the physical interface for host computers, the interface section is controlled according to the program code according to connection place.

[0037] Drawing 5 shows a flow chart when an output instruction comes to a printer from a host computer. first, a host computer top — reading conditions and printing conditions — setting up (S1) — reading conditions and printing conditions are transmitted to a reader through SCSI (S2). The printing conditions in the image data processing section are set up (S3). Initiation of operation is directed on a host computer (S4). Initiation of operation is directed to a reader through SCSI (S5). The read image data is transmitted to a printer with Centronics through the image data processing section (S6). After reading is completed and the transfer to the printer of all image data is completed (S7), printing actuation by the printer is performed (S8).

[0038] Drawing 6 shows a flow chart when printer output directions come from a control unit. First, reading and printing conditioning are carried out with control unit top various mode setting switches (S11). Printing conditions are set to the image data processing section (S12), and initiation of operation is directed with a start-on control unit switch (S13). The read image data is transmitted to a printer with Centronics through the image data processing section (S14). reading termination — carrying out — the transfer to the printer of all image data — ending (S15) — printing actuation by the printer is performed (S16).

[0039] Drawing 7 shows a flow chart in case a physical interface is one SCSI. a host computer top — reading conditions and printing conditions (the output destination change printer ID is included) — setting up (S21) — reading conditions and printing conditions are transmitted to a reader through SCSI (S22). (a reader is target actuation) Printing conditions are set to the image data processing section (S23). Initiation of operation is directed on a host computer (S24), and initiation of operation is directed through SCSI to a reader (S25). (a reader is target actuation) The read image data is transmitted to the printer specified in SCSI through the image data processing section (S26). (this reader is initiator actuation) reading termination — carrying out — the transfer to the printer of all image data — ending (S27) — printing actuation by the printer is performed (S28).

[0040] Drawing 8 shows a flow chart in case a physical interface is one network. Reading conditions and printing conditions (the output destination change printer address is also included) are set up on a client (S31). Reading conditions and printing conditions are transmitted to a reader through a network (there is also a case via a server) (S32). Printing conditions are set to the image data processing section (S33). Initiation of operation is directed on a client (S34). Initiation of operation is directed to a reader through a network (there is also a case via a server) (S35). After the read image data is transmitted to the printer specified through the image data processing section in the network (S36), and carries out reading termination (S37) and the transfer to the printer of all image data is completed, printing actuation by the printer is performed (S38).

[0041] Drawing 9 shows the example of processing of image data. The image data (left-hand side in drawing) inputted into the image data processing section 50 in each processing processing sections 53, 54, and 55 in the image data processing section 50 The address of where [ of the width of face of image data, die length and a form ] to print, a printer paper size, The header showing printing number of sheets is inserted in the head of image data, the order exchange of a bit of image data and ASCII-ized processing (for example, 58hex->35hex+38hex) of binary data

are performed if needed, and it changes into header + processing image data (drawing Nakamigi side).

[0042] Drawing 10 is the top view having shown the example of a control unit 52. A control unit 52 consists of LCD which performs character representation, and two or more switches, and is controlled by serial communication from CPU20. The start key 201, the ten key 202, the clearance/stop key 203, and the mode clear key 204 are formed in the actuation display 200. A push on a switch carries out character representation of the character code to which the code corresponding to the switch was sent to CPU20, and has been sent from CPU20 to LCD. The various keys which the various LED displays which perform the selected mode display are prepared, and set up paper-size, concentration, alphabetic character, photograph, etc. and printing conditions and reading conditions are prepared in another actuation display 205.

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[Translation done.]

\* NOTICES \*

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the side elevation showing the example of the mechanical component of the image reader concerning this invention.

[Drawing 2] It is the block diagram showing the example of the electric signal-processing system of the image reader concerning this invention, and a control system.

[Drawing 3] It is the block diagram showing the example of the image data processing section which can be used for the image reader concerning this invention.

[Drawing 4] It is the block diagram showing various kinds of examples of the interface section which can be used for the image reader concerning this invention.

[Drawing 5] It is the flow chart which shows the example of the image reader concerning this invention of operation.

[Drawing 6] It is the flow chart which shows another example of the image reader concerning this invention of operation.

[Drawing 7] It is the flow chart which shows still more nearly another example of the image reader concerning this invention of operation.

[Drawing 8] It is the flow chart which shows still more nearly another example of the image reader concerning this invention of operation.

[Drawing 9] It is the mimetic diagram having shown the example of processing in the image data processing means of the image reader concerning this invention.

[Drawing 10] It is the front view showing the example of a control unit applicable to the image reader concerning this invention.

[Description of Notations]

50 Image Data Processing Means

52 Control Unit

57 1st Interface

58 2nd Interface

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[Translation done.]

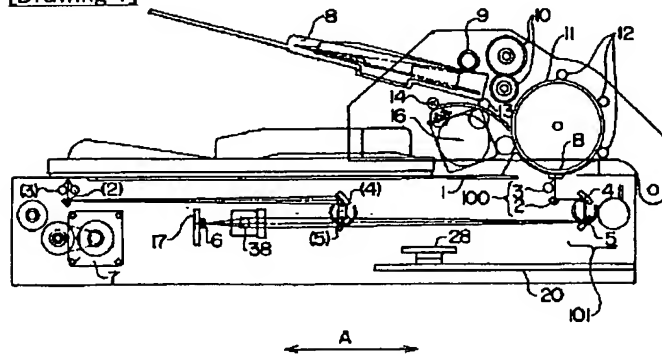
\* NOTICES \*

JP0 and NCIP1 are not responsible for any damages caused by the use of this translation.

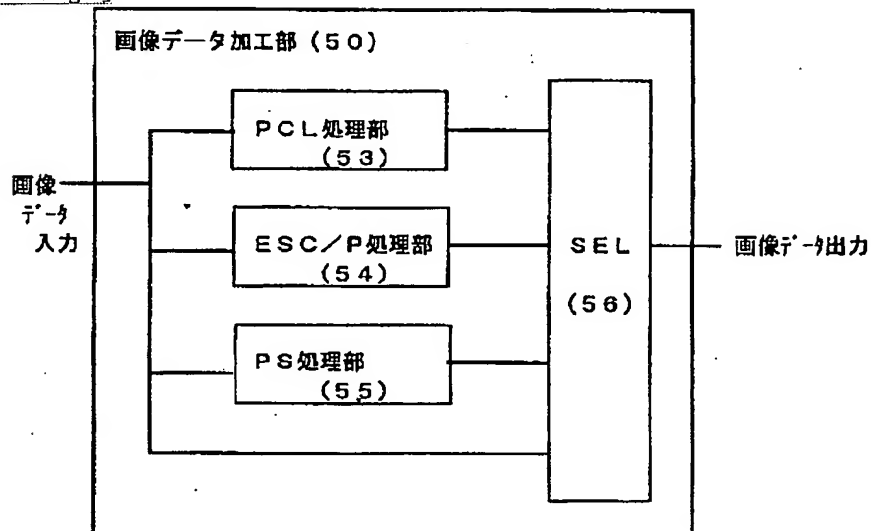
- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DRAWINGS

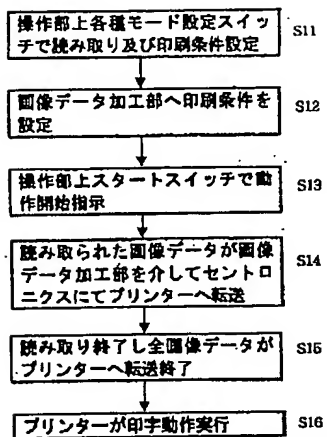
[Drawing 1]



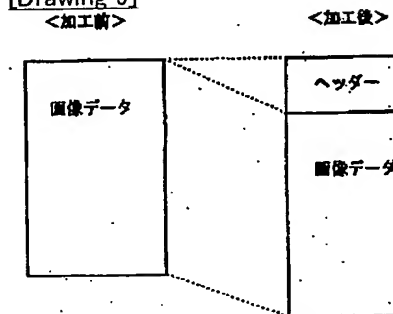
[Drawing 3]



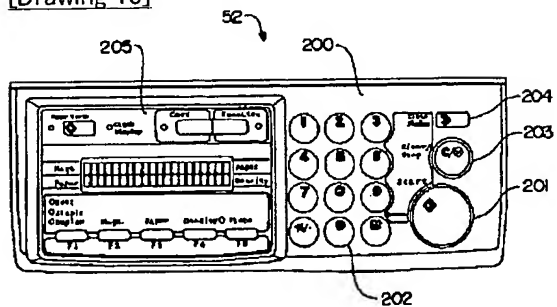
[Drawing 6]



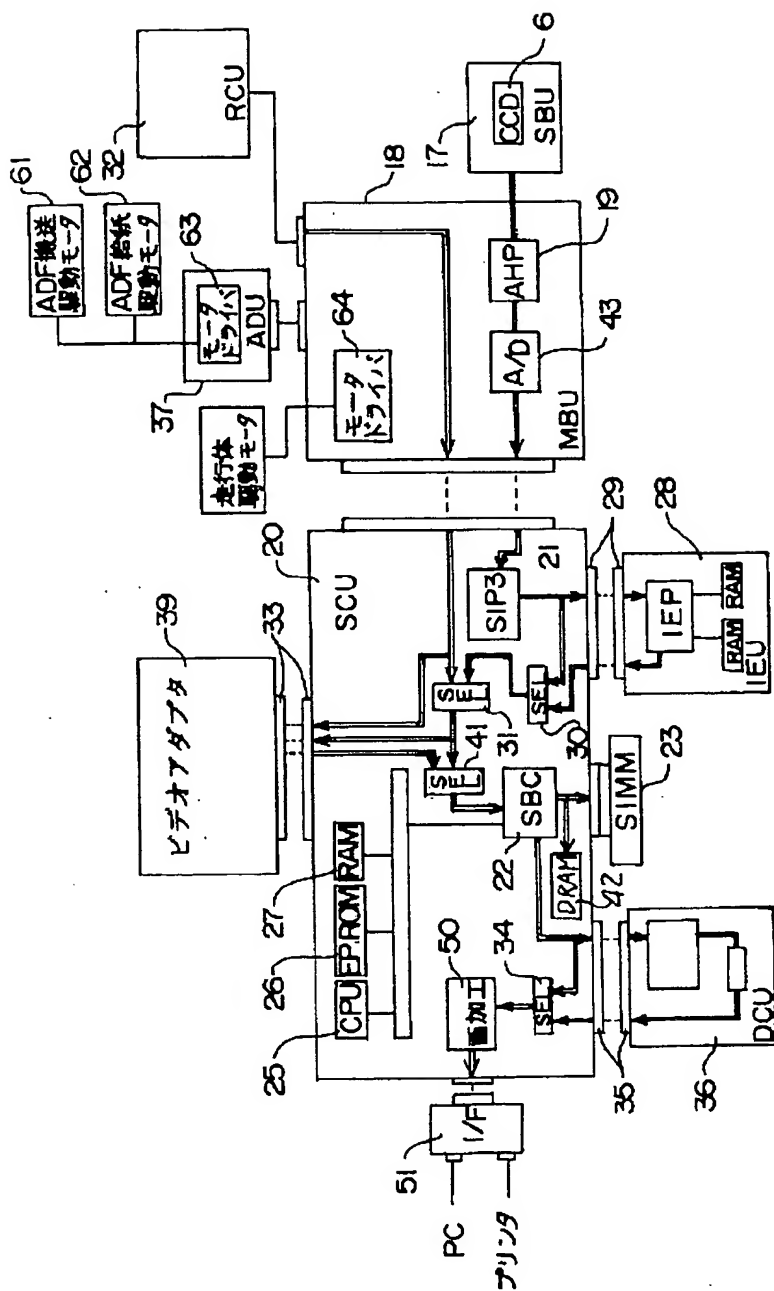
[Drawing 9]



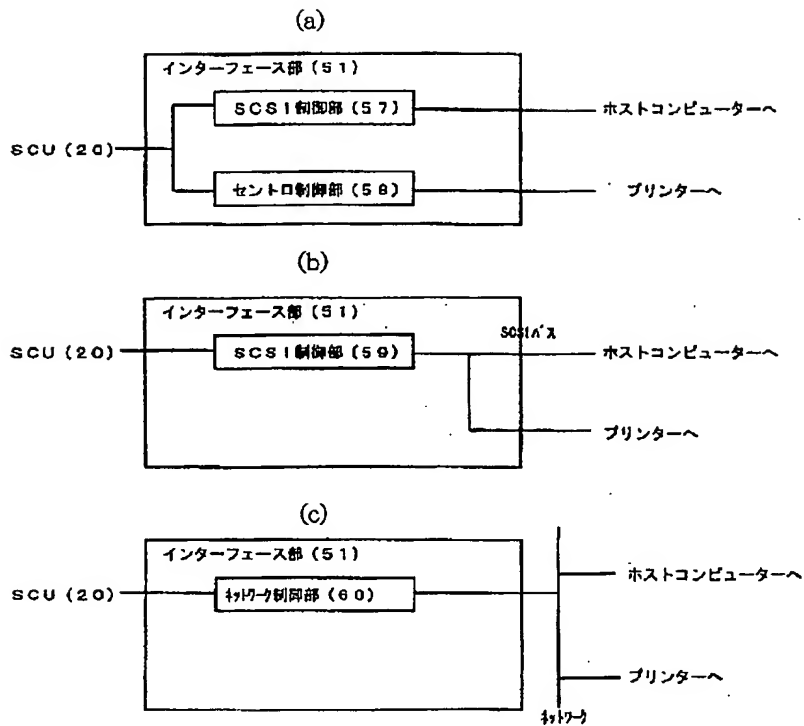
[Drawing 10]



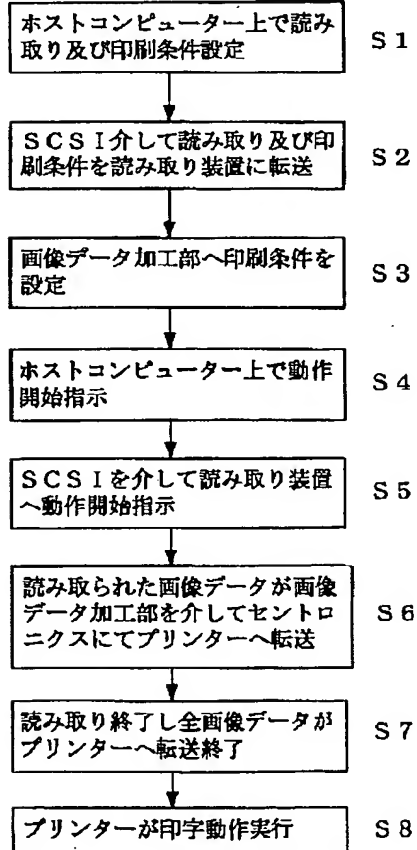
[Drawing 2]



[Drawing 4]

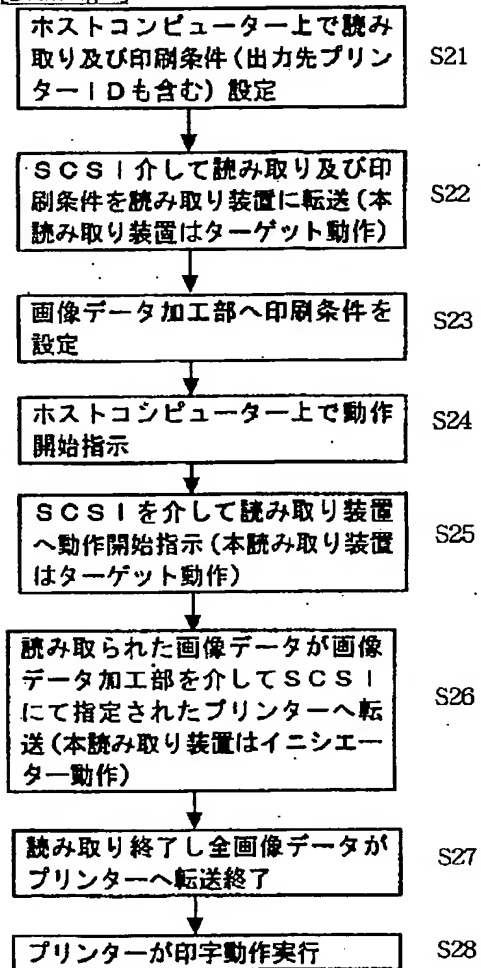


[Drawing 5]

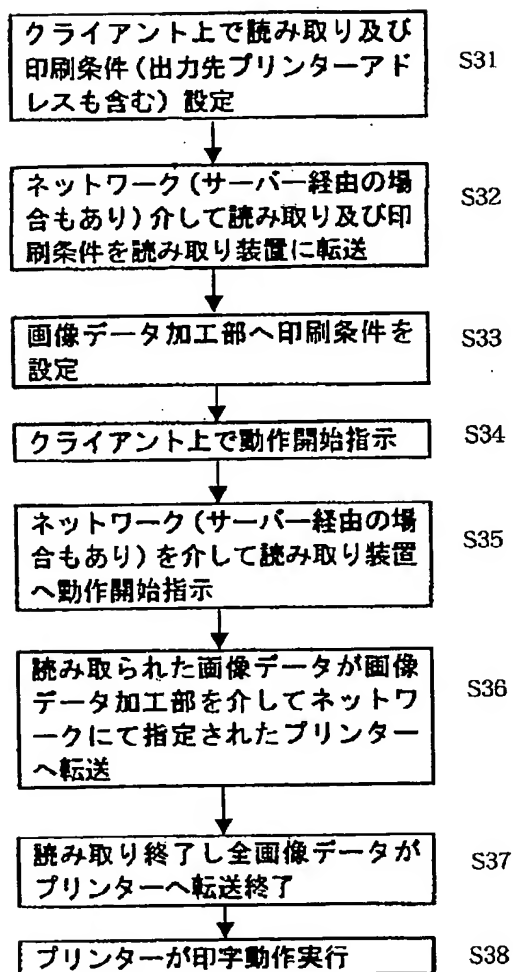




[Drawing 7]



[Drawing 8]



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[Translation done.]

(11)特許出願公開番号

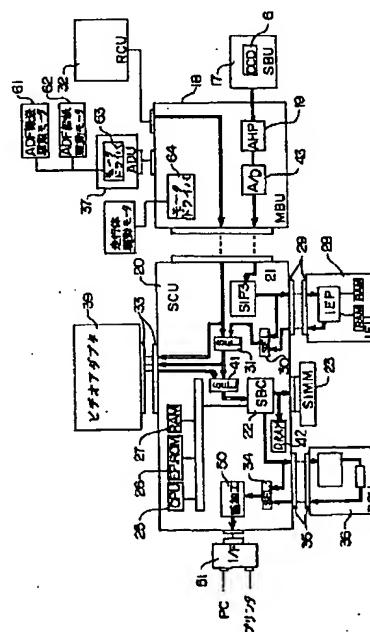
(43)公開日 平成10年(1998)6月19日

(21)出願番号	特願平8-336388	(71)出願人	000006747 株式会社リコー 東京都大田区中馬込1丁目3番6号
(22)出願日	平成8年(1996)12月2日	(72)発明者	木谷 行利 東京都大田区中馬込1丁目3番6号 株式 会社リコー内

(57) 【要約】

【課題】 読み取った画像データをプリンターでプリントできるデータ形式で直接転送することにより、プリント出力時間を短縮することができる画像読取装置を得る。

【解決手段】 原稿画像を読み取る読取手段と、読み取った画像データを加工する画像データ加工手段と、加工した画像データを外部装置へ転送する第1のインターフェース手段とを備え、加工した画像データをプリンター装置へ転送する第2のインターフェース手段を有する。



## 【特許請求の範囲】

【請求項 1】 原稿画像を読み取る読取手段と、読み取った画像データを加工する画像データ加工手段と、加工した画像データを外部装置へ転送する第 1 のインターフェース手段とを備え、加工した画像データをプリンター装置へ転送する第 2 のインターフェース手段を有することを特徴とした画像読取装置。

【請求項 2】 請求項 1 記載の発明において、第 2 のインターフェース手段に接続されたプリンターに合わせたドットマップデータに画像データを加工する画像データ加工手段を有することを特徴とした画像読取装置。

【請求項 3】 請求項 1 または 2 記載の発明において、複数の画像データ加工手段と、複数の画像データ加工手段のうちのひとつを選択する画像データ加工選択手段を有し、第 2 のインターフェース手段に接続されたプリンターに合わせて画像データ加工選択手段を選択することを特徴とした画像読取装置。

【請求項 4】 請求項 1、2 または 3 記載の発明において、第 1 のインターフェース手段からの指示で画像データ加工選択と読取動作を実行し、読み取った画像データを第 2 のインターフェース手段に出力することを特徴とした画像読取装置。

【請求項 5】 請求項 1、2 または 3 記載の発明において、操作部を有し、操作部からの指示で画像データ加工選択と読取動作を実行し、読み取った画像データを第 2 のインターフェース手段に出力することを特徴とした画像読取装置。

【請求項 6】 請求項 3 記載の発明において、第 2 のインターフェース手段がセントロニクスであることを特徴とした画像読取装置。

【請求項 7】 請求項 1、2 または 3 記載の発明において、第 1 のインターフェース手段と第 2 のインターフェース手段が物理的に同一で、理論的に分離していることを特徴とした画像読取装置。

【請求項 8】 請求項 7 記載の発明において、第 1 のインターフェース手段と第 2 のインターフェース手段が SCSI (Small Computer System Interface) であることを特徴とした画像読取装置。

【請求項 9】 請求項 7 記載の発明において、第 1 のインターフェース手段と第 2 のインターフェース手段がネットワークであることを特徴とした画像読取装置。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】 本発明は、外部装置に画像データを転送することができる画像読取装置に関するものである。

## 【0002】

【従来の技術】 外部装置に画像データを転送することができる従来の画像読取装置では、ホストコンピュータを

介さずに直接プリンターやハードディスクに画像データを転送するようになっている。例えば、特開平 3-291045 号公報に記載されているように、画像読取手段と入出力インターフェースとを有し、内部制御をイニシエータ動作に変換する変換手段と、イニシエータ動作に基づいて外部装置との通信を制御する通信制御手段とを備えた画像読取装置が知られている。また、特開平 4-12577 号公報に記載されているように、画像情報を外部装置へ SCSI を用いて繰出す画像読取装置において、所定の記憶手段と画像情報出力手段を備え、ホストコンピュータの指定したファイル形式と出力先に従い画像情報を出力する画像読取装置が知られている。

【0003】 上記前名の公報に記載されている発明のように、画像読取装置の出力を直接プリンター装置へ転送するという発明は知られているが、画像データをプリンターがプリントできる形式のデータに加工するような構成ではなかったため、接続できるプリンター装置は専用であり、一般的なページ記述言語に対応した汎用プリンターとの接続はできなかった。また、上記後名の公報に記載されている発明のように、ホストコンピュータを介して汎用プリンターへ接続するシステムも存在するが、一旦ホストコンピュータを介するので、プリント出力まで時間がかかるという問題点があった。

## 【0004】

【発明が解決しようとする課題】 本発明は、上記問題点を解決し、読み取った画像データをプリンターでプリントできるデータ形式で直接転送することにより、プリント出力時間を短縮することができる画像読取装置を提供することを目的とする。

## 【0005】

【課題を解決するための手段】 前記課題を解決するために請求項 1 記載の発明は、原稿画像を読み取る読取手段と、読み取った画像データを加工する画像データ加工手段と、加工した画像データを外部装置へ転送する第 1 のインターフェース手段とを備え、加工した画像データをプリンター装置へ転送する第 2 のインターフェース手段を有することを特徴とする。

【0006】 前記課題を解決するために請求項 2 記載の発明は、請求項 1 記載の発明において、第 2 のインターフェース手段に接続されたプリンターに合わせたドットマップデータに画像データを加工する画像データ加工手段を有することを特徴とする。

【0007】 前記課題を解決するために請求項 3 記載の発明は、請求項 1 または 2 記載の発明において、複数の画像データ加工手段と、複数の画像データ加工手段のうちひとつを選択する画像データ加工選択手段を有し、第 2 のインターフェース手段に接続されたプリンターに合わせて画像データ加工選択手段を選択することを特徴とする。

【0008】 前記課題を解決するために請求項 4 記載の

発明は、請求項1、2または3記載の発明において、第1のインターフェース手段からの指示で画像データ加工選択と読取動作を実行し、読み取った画像データを第2のインターフェース手段に出力することを特徴とする。

【0009】前記課題を解決するために請求項5記載の発明は、請求項1、2または3記載の発明において、操作部を有し、操作部からの指示で画像データ加工選択と読取動作を実行し、読み取った画像データを第2のインターフェース手段に出力することを特徴とする。

【0010】前記課題を解決するために請求項6記載の発明は、請求項3記載の発明において、第2のインターフェース手段がセントロニクスであることを特徴とする。

【0011】前記課題を解決するために請求項7記載の発明は、請求項1、2または3記載の発明において、第1のインターフェース手段と第2のインターフェース手段が物理的に同一で、理論的に分離していることを特徴とする。

【0012】前記課題を解決するために請求項8記載の発明は、請求項7記載の発明において、第1のインターフェース手段と第2のインターフェース手段がSCSI (Small Computer System Interface) であることを特徴とする。

【0013】前記課題を解決するために請求項9記載の発明は、請求項7記載の発明において、第1のインターフェース手段と第2のインターフェース手段がネットワークであることを特徴とする。

【0014】

【発明の実施の形態】以下、図面を参照しながら本発明にかかる画像読取装置の実施の形態について説明する。図1は、本発明にかかる画像読取装置の機械的構成部分の一例を示す側面図である。原稿を載せる原稿台ガラス1の下方に第1走行体100と第2走行体101が配置されている。第1走行体100は照明ランプ3と第1ミラー2とを有し、照明ランプ3と第1ミラー2が一体的に移動可能となっている。第1ミラー2は原稿からの反射光を水平方向に反射する。また、第2走行体101は第2ミラー4と第3ミラー5とを有し、これら第2、第3ミラー4、5は反射面が互いに直角になるように斜設され、第1ミラー2からの反射光を水平方向に折り返す。その後反射光は、レンズ38により集束され、CCD6に照射され光電変換される。第1走行体100と第2走行体101はともに走行体モーター7を駆動源とし、A方向に移動可能となっている。この時、露光中の原稿からCCD16までの光学的距離を一定に保つために、第1走行体100は、第2走行体101に対して2倍の速度で移動するようにしている。

【0015】原稿トレイ8に載置された原稿は、ピックアップローラ9、レジストローラ対10、搬送ドラム1

1、搬送ローラ12により読取位置Bを経て、排紙ローラ対13、14へ送り込まれ、排紙トレイ15上に排出される。

【0016】原稿は、読取位置Bを通過する際に、読取位置B近傍に移動されている照明ランプ3により照射され、その反射光は第1ミラー2及び一体に構成された第2ミラー4、第3ミラー5で走査される。その後反射光は、レンズ38により集束され、CCD6に照射され光電変換される。

【0017】原稿が上記のように原稿トレイ8から供給される場合は、第1走行体100と第2走行体101は、図1において右方への走行限界位置に止まったままであるが、原稿台ガラス1上に載置した原稿を読み取る場合は、第1走行体100と第2走行体101を原稿台ガラス1に沿って走行させながら原稿を読み取る。図1において、かっこ付の符号(2)(3)(4)(5)はそれぞれ照明ランプ3、第1ミラー2、第2ミラー4、第4ミラー5が左方への限界位置にあることを示している。

【0018】ピックアップローラ9、レジストローラ対10、排紙ローラ対13、14は、図示しない搬送モータにより駆動され、搬送ドラム11、搬送ローラ2、排紙ローラ対13、14は、搬送モータ16により駆動される。

【0019】図2は、本発明にかかる画像読取装置の電氣的信号処理系および制御系の例を示すブロック図である。走査された原稿の反射光は、SBU(センサーボードユニット)17上のCCD6に入光し、CCD6内で光の強度に応じた電圧値をもつアナログ信号に変換される。アナログ信号は、奇数ビットと偶数ビットに分かれて出力される。アナログ画像信号は、MBU(マザーボードユニット)18上のAHP(アナログデータハンドリングペリフェラル)19で暗電位部分が取り除かれ、奇数ビットと偶数ビットが合成され、所定の振幅にゲイン調整された後にA/Dコンバータ43に入力され、デジタル信号化される。

【0020】デジタル化された画像信号は、SCU(スキャナーコントロールユニット)20上のSIP3(スキャナーイメージペリフェラル)21でシェーディング補正、ガンマ補正、MTF補正が行われた後、2値化され、ページ同期信号、ライン同期信号、画像クロックと共にビデオ信号として出力される。

【0021】SIP3(21)から出力されたビデオ信号は、コネクタ29を介してIEU(イメージエンハンスユニット)28へ出力されている。IEU28へ出力されたビデオ信号は、IEU28内で所定の画像処理が行われ、再びSCU20へ入力される。

【0022】再びSCU20へ入力されたビデオ信号は、セレクト30に入力される。セレクト30のもう一方の入力信号は、SIP3(21)から出力されたビデオ

オ信号が直接セクタ30に入力された信号で、IEU 28では、画像処理がされた信号と画像処理がされていない信号を選択できる構成となっている。

【0023】セクタ30の出力信号は、セクタ31に入力される。セクタ31のもう一方の入力信号は、RCU（リバースサイドコントロールユニット）32からのビデオ信号であり、原稿の表または裏の読取情報の何れかを選択できる構成になっている。

【0024】上記RCU32は、原稿の両面を同時に読み取る際に、原稿の裏側読取を制御するユニットである。RCU32は、SCU20内のCPU25によりシリアル通信で制御され、読み取った裏面画像データをビデオ信号として上記MBU18経由でSCU20に転送する。

【0025】セクタ31からのビデオ信号出力は、セクタ41とコネクタ33に接続されたビデオアダプタ39に入力される。ビデオアダプタ39に入力されたビデオ信号は、ビデオアダプタ39で処理され、コネクタ33を介してセクタ41に入力されている。セクタ41では、セクタ33からのビデオ信号とビデオアダプタ39からのビデオ信号を選択できる構成になっている。セクタ41からのビデオ信号出力は、SBC（スキャンバッファコントローラ）22に入力される。

【0026】以上の経路を経て、SIP3（21）から出力されたビデオ信号は、画像データ記憶手段（DRAM）42を管理する上記SBC22に入力され、SIMM（シングルインラインメモリーモジュール）23を含めてDRAM42から構成される画像メモリに蓄えられる。SBC22の出力は、セクタ34及びコネクタ35を介してDCU（データコンプレッションユニット）36に入力される。DCU36では、入力された画像データを圧縮する。DCU36により圧縮された画像データと、SBC22から出力される画像データは、セクタ34の入力信号となり、セクタ34は画像データを圧縮するかしないかを選択できる構成となっている。

【0027】前記セクタ34で選択された画像データ出力は、画像データ加工部50に送られる。画像データ加工部50内では、CPU25からの指示で入力した画像データを出力先のプリンターのページ記述言語に対応したデータ形式のドットマップデータに加工する。プリンター出力せずにホストコンピューターへ出力する場合は、加工せずにスルーさせて出力する。

【0028】画像データ加工部50の画像データ出力は、インターフェース部51を介して外部装置であるホストコンピューター又はプリンター装置に送られる。

【0029】前記SCU20上には、CPU25、ROM26、RAM27が実装されており、SCSIコントローラーを制御してホストコンピューターとの通信を行う。また、CPU25は、ステッピングモーターである走行体モーター7の動作タイミングをモータードライバ64を

介して行い、図示しない給紙モーター、搬送モーター16のタイミング制御も行っている。

【0030】ADU（ADF ドライビングユニット）37は、モータードライバ63を介して、自動原稿搬送機構（ADF）部に用いる電装部品であるADF給紙駆動モーター62、ADF搬送駆動モーター61等への電力供給を中継する機能を有し、MBU18に接続されている。

【0031】図3は、画像データ加工部50の構成を示したものである。画像データ加工部50は、出力するプリンター別の複数の加工処理部53、54、55とセクター56から構成されている。セクター56は、複数の加工処理部53、54、55と未加工データの四つの中から一つを選択するような構成になっている。なお、本実施の形態においては、HP（ヒューレット・パッカー）社製プリンター用（53：PCL加工処理部）、エプソン社製プリンター用（54：ESP/P加工処理部）及びポストスクリプトプリンター用（55：PS加工処理部）の三つの加工処理部を有する場合を示しているが、本発明はこれらに限定するものではなく、必要に応じて加工処理部の数を増減することができる。

【0032】各加工処理部53、54、55では、画像データの幅と長さ、用紙のどこに印字するのかのアドレス、プリンター用紙サイズや印刷枚数等を表すヘッダーを画像データの先頭（又は後尾）に挿入し、必要に応じて画像データのビット順入れ換えやバイナリーデータのアスキー化処理（例えば、58hex→35hex+38hex）が行われる。各加工処理部53、54、55は、CPU25バスに接続されていて、CPU25により上記ヘッダーの情報が各加工処理部53、54、55に書き込まれる。

【0033】図4の（a）（b）（c）は、インターフェース部51の構成の例をそれぞれ示したものである。図4の（a）（b）（c）において、インターフェース部51は、SCU20と切り離し可能な構成となっている。図4（a）において、SCSI制御部57とセントロ制御部58からなるインターフェース部51は、SCU20と接続され、SCSI制御部57はホストコンピューターに、セントロ制御部58はプリンターにそれぞれ接続されている。本実施の形態においては、第1インターフェース手段がSCSI制御部57に該当し、第2インターフェース手段がセントロ制御部58に該当する。

【0034】図4（b）においては、SCSI制御部59のみからなるインターフェース部51は、SCU20と接続され、SCSI制御部59はホストコンピューターとプリンターにSCSIバスにより接続されている。本実施の形態においては、第1インターフェース手段と第2インターフェース手段がSCSI制御部59に該当する。

【0035】図4(c)においては、ネットワーク制御部60のみからなるインターフェース部51は、SCU20と接続され、SCSI制御部60はホストコンピュータとプリンターにネットワークにより接続されている。本実施の形態においては、第1インターフェース手段と第2インターフェース手段がネットワーク制御部60に該当する。

【0036】SCU20内のCPU25は、EPROM26上に実装されているインターフェースと別のプログラムコードに従い、各インターフェース部の制御を行う。プリンター用物理インターフェースがホストコンピュータ用物理インターフェースと同一の場合は、接続先別のプログラムコードに従いインターフェース部の制御を行う。

【0037】図5は、ホストコンピュータからプリンターに出力命令がきた場合のフローチャートを示したものである。まず、ホストコンピュータ上で読取条件及び印刷条件を設定する(S1)と、SCSIを介して読取条件及び印刷条件を読取装置に転送する(S2)。画像データ加工部での印刷条件を設定する(S3)。ホストコンピュータ上で動作開始を指示する(S4)。SCSIを介して読取装置へ動作開始を指示する(S5)。読み取られた画像データが画像データ加工部を介してセントロニクスにてプリンターへ転送される(S6)。読み取りが終了し、全画像データのプリンターへの転送が終了すると(S7)、プリンターによる印字動作が実行される(S8)。

【0038】図6は、操作部からプリンター出力指示がきた場合のフローチャートを示したものである。まず、操作部上各種モード設定スイッチで読取及び印刷条件設定する(S11)。画像データ加工部へ印刷条件を設定し(S12)、操作部上スタートスイッチで動作開始を指示する(S13)。読み取られた画像データは画像データ加工部を介してセントロニクスにてプリンターへ転送される(S14)。読み取り終了し、全画像データのプリンターへの転送が終了する(S15)と、プリンターによる印字動作が実行される(S16)。

【0039】図7は、物理インターフェースがSCSI一つの場合のフローチャートを示したものである。ホストコンピュータ上で読取条件及び印刷条件(出力先プリンターIDも含む)を設定する(S21)と、SCSIを介して読取条件及び印刷条件を読取装置に転送(読取装置はターゲット動作)する(S22)。画像データ加工部へ印刷条件を設定する(S23)。ホストコンピュータ上で動作開始が指示され(S24)、SCSIを介して読取装置へ動作開始が指示(読取装置はターゲット動作)される(S25)。読み取られた画像データが画像データ加工部を介してSCSIにて指定されたプリンターへ転送(本読取装置はイニシエーター動作)される(S26)。読取終了し、全画像データのプリン

ターへの転送が終了する(S27)と、プリンターによる印字動作が実行される(S28)。

【0040】図8は、物理インターフェースがネットワーク一つの場合のフローチャートを示したものである。クライアント上で読取条件及び印刷条件(出力先プリンターアドレスも含む)が設定される(S31)。ネットワーク(サーバー経由の場合もある)を介して読取条件及び印刷条件を読取装置に転送する(S32)。画像データ加工部へ印刷条件を設定する(S33)。クライアント上で動作開始を指示する(S34)。ネットワーク(サーバー経由の場合もある)を介して読取装置へ動作開始を指示する(S35)。読み取られた画像データが画像データ加工部を介してネットワークにて指定されたプリンターへ転送され(S36)、読取終了し(S37)、全画像データのプリンターへの転送が終了すると、プリンターによる印字動作が実行される(S38)。

【0041】図9は、画像データの加工例を示したものである。画像データ加工部50に入力された画像データ(図中左側)を、画像データ加工部50内の各加工処理部53、54、55で、画像データの幅と長さ、用紙のどこに印字するのかのアドレス、プリンター用紙サイズ、印刷枚数を表すヘッダーを画像データの先頭に挿入し、必要に応じて画像データのビット順入れ換えやバイナリーデータのアスキー化処理(例えば、58hex→35hex+38hex)が行われ、ヘッダー+加工画像データ(図中右側)に変換する。

【0042】図10は、操作部52の例を示した平面図である。操作部52は、文字表示を行うLCDと複数のスイッチから構成され、CPU20からシリアル通信で制御される。操作表示部200には、スタートキー201、テンキー202、クリア/ストップキー203、モードクリアキー204が設けられている。スイッチが押されるとそのスイッチに対応したコードがCPU20に送られ、CPU20から送られてきた文字コードがLCDへ文字表示される。別の操作表示部205には、選択されたモード表示を行う各種LED表示が設けられ、また、用紙サイズ、濃度、文字が写真かなど、印刷条件や読取条件を設定する各種キーが設けられている。

【0043】

【発明の効果】請求項1記載の発明によれば、原稿画像を読み取る読取手段と、読み取った画像データを加工する画像データ加工手段と、加工した画像データを外部装置へ転送する第1のインターフェース手段とを備え、加工した画像データをプリンター装置へ転送する第2のインターフェース手段を有し、読み取った画像データをプリンター装置にプリントできるデータ形式で直接転送できるので、ホストコンピュータを介してプリンター装置に出力する場合に対してプリント出力するまでの時間を短縮することができる。

【0044】請求項2記載の発明によれば、請求項1記載の発明において、第2のインターフェース手段に接続されたプリンターに合わせたドットマップデータに画像データを加工する画像データ加工手段を有し、画像データを一般的なページ記述言語に変換するので、汎用のプリンターと接続することが可能となる。

【0045】請求項3記載の発明によれば、請求項1または2記載の発明において、複数の画像データ加工手段と、複数の画像データ加工手段のうちの一つを選択する画像データ加工選択手段を有し、第2のインターフェース手段に接続されたプリンターに合わせて画像データ加工選択手段を選択するため、複数のページ記述言語に対応しているので、他種類のプリンターに接続することができる。

【0046】請求項4記載の発明によれば、請求項1、2または3記載の発明において、第1のインターフェース手段からの指示で画像データ加工選択と読取動作を実行し、読み取った画像データを第2のインターフェース手段に出力するので、操作部を有さない画像読取装置においても、プリンター直接出力とプリンターの種類の選択が可能になり、操作部を設ける必要がなくなり、構成が簡略化でき、小型化かつ低コスト化が可能となる。

【0047】請求項5記載の発明によれば、請求項1、2または3記載の発明において、操作部を有し、操作部からの指示で画像データ加工選択と読取動作を実行し、読み取った画像データを第2のインターフェース手段に出力するので、ホストコンピュータを操作せずにプリンター直接出力とプリンターの種類の選択が可能になり、ホストコンピュータの負荷低減と操作性の向上を図ることができる。

【0048】請求項6記載の発明によれば、請求項3記載の発明において、第2のインターフェース手段がセントロニクスであるので、最も一般的なプリンター物理IFを有しており、接続できるプリンターの種類を多くすることができる。

【0049】請求項7記載の発明によれば、請求項1、2または3記載の発明において、第1のインターフェース手段と第2のインターフェース手段が理論的に分離しているが物理的に同一であるので、装置の小型化及び低

コスト化を図ることができる。

【0050】請求項8記載の発明によれば、請求項7記載の発明において、第1のインターフェース手段と第2のインターフェース手段とを一般的なSCSIとしているので、多くの画像読取装置でプリンター直接出力することができる。

【0051】請求項9記載の発明によれば、請求項7記載の発明において、第1のインターフェース手段と第2のインターフェース手段とを一般的なネットワークとすることで、多くのプリンターからのプリンター直接出力をすることができる。

【図面の簡単な説明】

【図1】本発明にかかる画像読取装置の機械的構成部分の例を示す側面図である。

【図2】本発明にかかる画像読取装置の電気的信号処理系および制御系の例を示すブロック図である。

【図3】本発明にかかる画像読取装置に用いることができる画像データ加工部の例を示すブロック図である。

【図4】本発明にかかる画像読取装置に用いることができるインターフェース部の各種の例を示すブロック図である。

【図5】本発明にかかる画像読取装置の動作例を示すフローチャートである。

【図6】本発明にかかる画像読取装置の別の動作例を示すフローチャートである。

【図7】本発明にかかる画像読取装置のさらに別の動作例を示すフローチャートである。

【図8】本発明にかかる画像読取装置のさらに別の動作例を示すフローチャートである。

【図9】本発明にかかる画像読取装置の画像データ加工手段における加工例を示した模式図である。

【図10】本発明にかかる画像読取装置に適用可能な操作部の例を示す正面図である。

【符号の説明】

50 画像データ加工手段

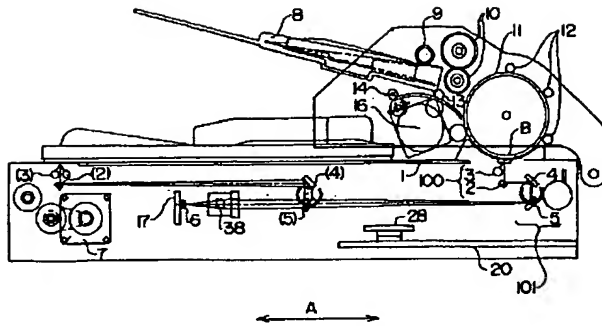
52 操作部

57 第1インターフェース

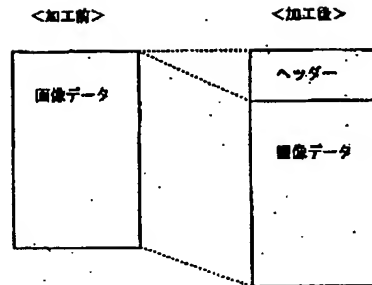
58 第2インターフェース



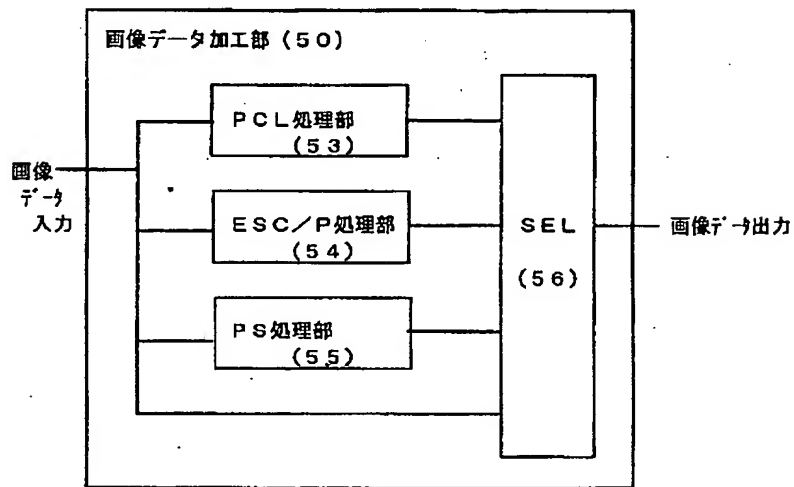
【図1】



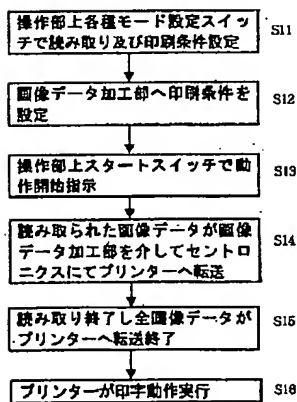
【図9】



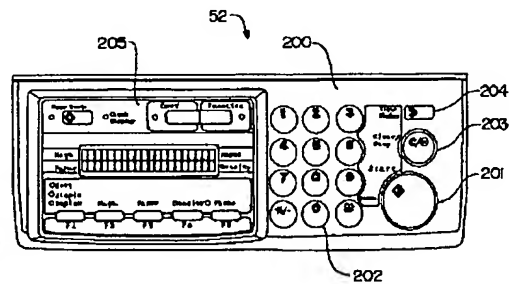
【図3】



【図6】

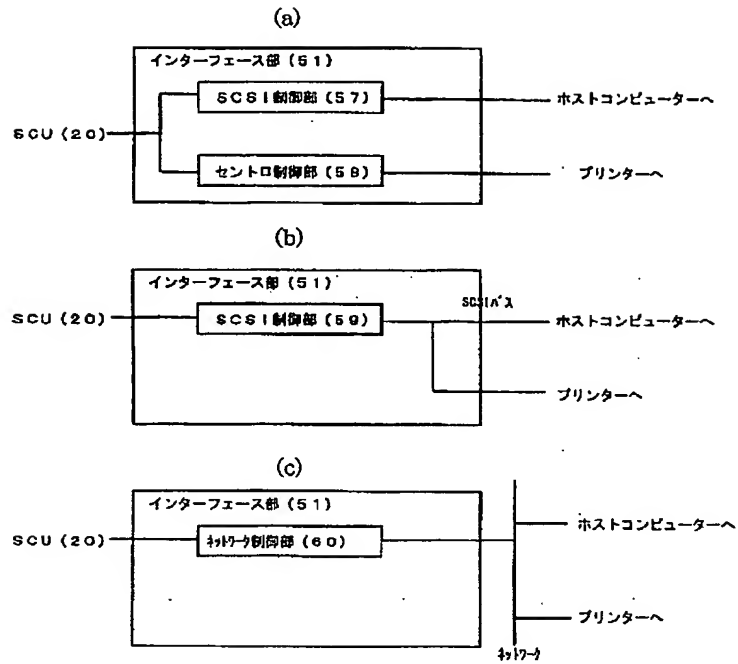


【図10】

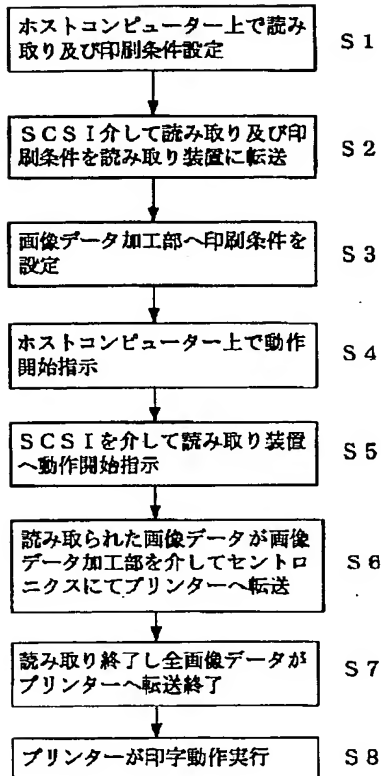




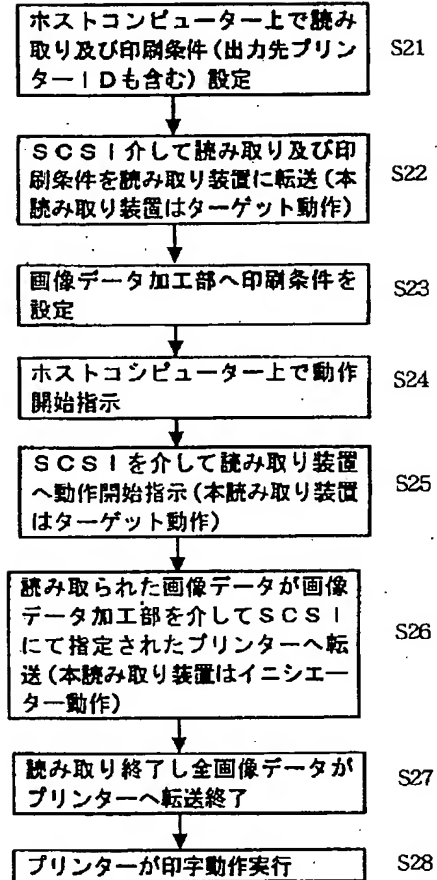
【図4】



【図5】



【図7】



【図8】

